

WHAT IS CLAIMED IS:

1. A power spectral density (PSD) mask for spectral shaping of a dual bit map (DBM) mode downstream transmission, the PSD mask represented by an equation:

$$PSD_{DBMsOL} = K_{ADSL_OL} \times \frac{C}{f_0} \times \frac{\left[\sin\left(\pi \frac{f}{f_0}\right) \right]^2}{\left(\pi \frac{f}{f_0} \right)^2} \times \frac{1}{1 + \left(\frac{f}{f_{LP3dB}} \right)^{12}} \times \frac{1}{1 + \left(\frac{f_{HP3dB}}{f} \right)^6}, \quad 0 < f < \infty$$

- 5 where PSD_{DBMsOL} represents the PSD mask, K_{ADSL_OL} represents a constant value, C represents a constant value, f represents a frequency of the downstream transmission, f_0 represents a constant value, f_{LP3dB} represents a 3 decibel (dB) low pass frequency and f_{HP3dB} represents a 3 dB high pass frequency.
- 10 2. The PSD mask as in Claim 1, wherein K_{ADSL_OL} has a value between 0.0900 watts and 0.1200 watts.
3. The PSD mask as in Claim 2, wherein K_{ADSL_OL} has a value of 0.1104 watts.
- 15 4. The PSD mask as in Claim 1, wherein f_0 has a value between 2.100 megahertz and 2.300 megahertz.
5. The PSD mask as in Claim 1, wherein f_0 has a value of 2.208 megahertz.
- 20 6. The PSD mask as in Claim 1, f_{LP3dB} has a value substantially equal to $\frac{f_0}{2}$.
7. The PSD mask as in Claim 1, wherein f_{HP3dB} has a value between 100 kilohertz and 150 kilohertz.

8. The PSD mask as in Claim 1, wherein f_{HP3dB} has a value of 130 kilohertz.

9. The PSD mask as in Claim 1, wherein C has a value between 0.1 and 10.

5 10. The PSD mask as in Claim 7, wherein C has a value of 2.

11. The PSD mask as in Claim 10, wherein f_{HP3dB} has a value of 130 kilohertz.

12. The PSD mask as in Claim 11, f_{LP3dB} has a value substantially equal to $\frac{f_0}{2}$.

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13. The PSD mask as in Claim 12, wherein K_{ADSL_OL} has a value of 0.1104 watts.

14. The PSD mask as in Claim 13, wherein f_0 has a value of 2.208 megahertz.

15 15. A power spectral density (PSD) mask for spectral shaping of a far end cross talk (FEXT) bit map (FBM) mode downstream transmission, the PSD mask represented by an equation:

$$PSD_{FBMOL} = K_{ADSL_OL} \times \frac{C}{f_0} \times \frac{\left[\sin\left(\pi \frac{f}{f_0}\right) \right]^2}{\left(\pi \frac{f}{f_0} \right)^2} \times \frac{1}{1 + \left(\frac{f}{f_{LP3dB}} \right)^{12}} \times \frac{1}{1 + \left(\frac{f_{HP3dB}}{f} \right)^8}, \quad 0 < f < \infty$$

where PSD_{FBMOL} represents the PSD mask, K_{ADSL_OL} represents a constant value, C represents a constant value, f represents a frequency of the downstream transmission, f_0 represents a constant value, f_{LP3dB} represents a 3 decibel (dB) low pass frequency and f_{HP3dB} represents a 3 dB high pass frequency.

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16. The PSD mask as in Claim 15, wherein K_{ADSL_OL} has a value between 0.0900 watts and 0.1200 watts.

17. The PSD mask as in Claim 16, wherein K_{ADSL_OL} has a value of 0.1104 watts.

18. The PSD mask as in Claim 15, wherein f_0 has a value between 2.100 megahertz and 2.300
5 megahertz.

19. The PSD mask as in Claim 15, wherein f_0 has a value of 2.208 megahertz.

20. The PSD mask as in Claim 15, f_{LP3dB} has a value substantially equal to $\frac{f_0}{2}$.
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21. The PSD mask as in Claim 15, wherein f_{HP3dB} has a value between 27 kilohertz and 40
kilohertz.

22. The PSD mask as in Claim 15, wherein f_{HP3dB} has a value of 32 kilohertz.
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23. The PSD mask as in Claim 15, wherein C has a value between 0.1 and 10.

24. The PSD mask as in Claim 23, wherein C has a value of 2.

25. The PSD mask as in Claim 24, wherein f_{HP3dB} has a value of 32 kilohertz.
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26. The PSD mask as in Claim 25, f_{LP3dB} has a value substantially equal to $\frac{f_0}{2}$.

27. The PSD mask as in Claim 26, wherein K_{ADSL_OL} has a value of 0.1104 watts.
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28. The PSD mask as in Claim 27, wherein f_0 has a value of 2.208 megahertz.